UNITED STATES DEPARTMENT OF THE INTERIOR
Office of Renewable Energy Programs
Bureau of Ocean Energy Management

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Guidelines for Information Requirements for a Renewable Energy Construction and Operations Plan (COP)

I. Introduction

This document provides guidance on the information requirements for a Construction and Operations Plan (COP) for Outer Continental Shelf (OCS) renewable energy activities on a commercial lease, as required by 30 CFR Part 585. The Bureau of Ocean Energy Management (BOEM) is providing these guidelines to clarify and supplement information requirements for COP submittals. Specifically, the purpose of this document is to provide guidance on survey requirements, project-specific information, and information to meet the requirements of the Outer Continental Shelf Lands Act (OCSLA), National Environmental Policy Act (NEPA), and other applicable laws and regulations.

This document is intended to be used as informal guidance to the regulated community and is not intended to set information or data standards or prescribe additional requirements. Rather, the purpose of this document is to further explain the applicable provisions of BOEM's renewable energy regulations, found at 30 CFR Part 585, and provide examples of documentation that may be submitted to help BOEM evaluate whether the requirements found in the regulations have been met.

II. Authority and Background

BOEM published the regulations found in 30 CFR Part 585 to establish procedures for the issuance and administration of leases, right-of-way (ROW) grants, and right-of-use and easement (RUE) grants for renewable energy production on the OCS, as well as RUEs for the alternate use of OCS facilities for energy or marine-related purposes. A COP contains information describing all planned facilities that you (the commercial lease applicant, the leaseholder, or operator of facilities on a commercial lease) construct and use for your project, along with all proposed activities including your proposed construction activities, commercial operations, and conceptual decommissioning plans for all planned facilities, including onshore and support facilities.

Pursuant to 30 CFR 585.601, a COP must be submitted six months prior to the completion of your site assessment term. A Site Assessment Plan (SAP) and COP can be submitted concurrently. The COP (or concurrent SAP/COP) is submitted only after you have a clearly defined project proposal and sufficient data and information for BOEM to conduct technical, NEPA, and other required reviews. You should design your project and conduct all activities in a manner that ensures safety and prevents undue harm or damage to archaeological or natural resources. You must also take measures to prevent the unauthorized discharge of pollutants including marine trash and debris into the offshore environment (30 CFR 585.105).

A COP must demonstrate that the project is being conducted in a manner that conforms to responsible offshore development per 30 CFR 585.621; this includes the demonstration of best management practices (BMPs). Additional information regarding BMPs resulting from the Record of Decision for the 2007 *Programmatic Environmental Impact Statement for Alternative Energy Development and Production and Alternate Use of Facilities on the Outer Continental Shelf* (Section 2.7), prepared by BOEM, is presented in Attachment A. You should review and refer to the BMPs as you design your project and incorporate them in all your project planning

and implementation stages. BMPs that are not proposed as part of your project may be included as a condition of approval of your COP. The BOEM is in the process of preparing guidance for several BMPs. These guidance documents will be made available at http://www.boem.gov/Regulatory-Framework-Guidelines/.

The information that must be submitted in a COP is specified in 30 CFR 585.626 (a) and (b). Detailed information and certifications (as specified under 30 CFR 585.627) must be submitted to assist BOEM in complying with its NEPA obligations and other relevant laws. In addition, BOEM will review your submitted COP and the information pursuant to 30 CFR 585.627 to determine if it contains all the information required by the regulations and the appropriate level of detail such that BOEM can deem your COP complete and ready for consideration. Your COP should include, as part of the information pursuant to 30 CFR 585.627, the requested baseline information requirements and impact-producing factors found in Attachment F. The scope of additional information and/or analyses will be identified on a project-by-project basis and is determined by the following:

(1) Alternatives developed and analyzed for your project;
(2) Concerns raised during the public scoping and hearing processes;
(3) Environmental and technical design reviews by BOEM of your proposed project; and
(4) Statutory state and federal consultations.

Additional mandatory mitigation measures and monitoring requirements may be identified or changed during BOEM's review process. Attachment F identifies other possible information needs. The need for additional information and/or analyses may change your proposed project plan and affect the project schedule.

III. Release of COP Information

The BOEM will conduct a completeness review after the COP submittal to ensure that the required elements of your submittal are present. Once BOEM has determined that your submittal is complete, the COP may become a public document and be available on BOEM's website. However, before doing so, BOEM will protect privileged or confidential information that is identified as such in the COP, as required by the Freedom of Information Act (FOIA) and the Trade Secrets Act.

Exemption 4 of FOIA applies to privileged or confidential information, such as trade secrets and commercial or financial information that you submit. If you wish to protect the confidentiality of such information, clearly mark it and request that BOEM treat it as confidential. The BOEM will not disclose such information, subject to the requirements of FOIA and, as applicable, the Trade Secrets Act. However, BOEM will not treat as confidential any aggregate summaries of such information or comments not containing such information.

Please label privileged or confidential information "Contains Confidential Information" and consider submitting such information as a separate attachment. In addition, the National Historic Preservation Act requires BOEM to withhold from public disclosure the location, character, or ownership of historic resources if the agency determines that the disclosure may, among other

concerns, risk harm to the historic resources or impede the use of traditional religious sites by practitioners.

IV. Number of Copies

30 CFR 585.622: You are required to provide BOEM with one paper copy and one electronic version of your COP and all supporting materials. Please consult the appropriate region for the preferred electronic format (see Section E of this guidance). If the COP contains information considered proprietary, depending on the amount of proprietary information, prepare a submittal that either:

(1) Contains a version stamped "public copy" without proprietary information and an agency version stamped "proprietary information"; or

(2) Consists of a public copy with all proprietary information in an appendix that can be removed before the COP is made public.

The BOEM may request additional hardcopies if affected states require them for their Coastal Zone Management Act consistency review or concurrence.

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A. Contents of a Construction and Operations Plan (COP)

(1) COP Purpose and Scope

The purpose of the COP is to provide a description of all proposed activities and planned facilities that you intend to construct and use for a project under a commercial lease. The COP must include all planned facilities, including onshore and support facilities, as well as anticipated project easement needs for the project. It must also describe the activities related to the project including construction, commercial operations, maintenance, decommissioning, and site clearance procedures. The COP will provide the basis for the analysis of the environmental and socioeconomic effects and operational integrity of your proposed construction, operation, and decommissioning activities.

The scope of a COP depends on how you wish to develop the commercial lease (for example, if you plan to construct your project in phases, this should be clearly documented). Data gathered from site assessment and site characterization activities should be used to develop your COP. In the event your project requires additional survey data beyond what has already been completed in support of the COP, BOEM will review the survey plans described in your COP before you begin such additional survey activities.

To facilitate easy review of your COP, it is highly advisable to structure your COP around the regulatory sections in 30 CFR Part 585 and identify how the information satisfies the requirements of each section. If you choose an alternate organization for your COP, please provide adequate cross references to the corresponding regulatory sections to allow us to trace your inputs back to the requirements of the regulations. Attachment B provides an example of an organizing theme that you may use to describe the elements of a project description. If you choose to use such a theme, ensure all appropriate regulatory sections are cross-referenced within it.

(2) Pre-Survey Coordination with BOEM: COP Survey Plan and Meeting

Prior to submittal of any plan, you are strongly encouraged to discuss your pre-survey planning with BOEM to ensure all surveys are conducted in a manner that addresses the regulatory information requirements for a COP, as well as those of state agencies with jurisdictional authority over your activities. Pre-survey coordination provides an opportunity for us to discuss common goals and expectations, agree upon the technical aspects and key parameters for the surveys, and ensure you have the necessary authorizations or permits from other resource agencies before you contract and mobilize your resources for an offshore survey(s).

BOEM recommends, and may require through lease stipulation, the development of a survey plan and the scheduling of one or more pre-survey meeting to discuss the survey plan. A COP survey plan should provide a general description of the environmental and physical condition of

the lease area and the timeline of the surveys to be conducted on your lease, necessary to support the submission of your COP and satisfy the information requirements in the applicable regulations, including but not limited to 30 CFR 621, 626, 627.

The survey plan should also include a desktop study on offshore activities, potential hazards, and environmental conditions. The desktop studies should include the following topics:

Anthropogenic Conditions and Hazards
Fisheries, marine sanctuaries, protected species, cables/pipelines, hydrocarbon exploration, restricted areas, hazards (shipwrecks, anchorage zones, rock outcrops, etc.), and territorial claims.

Environmental Conditions and Hazards
Oceanography, geology, bathymetry, geomorphology, seafloor conditions, seismic and volcanic activity, sediment transport, meteorology, navigational warnings, and restricted locations and/or time periods.

(3) COP Review Process

The submission of your COP is the initial step in a multi-step review process that may result in COP approval. Your COP will be reviewed by BOEM to determine: (1) whether it contains all of the required categories of information necessary to have it considered complete, and (2) whether the information provided is of sufficient quality and quantity to conduct technical and environmental reviews (30 CFR 585.628). If we determine that your COP meets submittal requirements, we will deem it complete, and then discuss with you the processing costs and preparation of appropriate environmental analysis documents (30 CFR 585.111).

(4) Phased Development

Pursuant to 30 CFR 585.629, a leaseholder or an applicant may include in its COP a request to develop its commercial lease in phases. If you plan to construct your project in phases, you must describe in detail the activities proposed for each of the phases for which you are seeking approval, and provide a schedule detailing the timeline for subsequent phased development.

Initial COP Submission – Required Data and Information

Your initial COP submission must include all of the information required for BOEM to conduct the necessary environmental and technical reviews of your Phase 1 project proposal. This includes the information requirements described in 30 CFR 585.626 and 627 for the proposed Phase 1 project and project area.

Your initial COP submission will also be required to contain varying levels of data for the remaining portions of your lease area. The data requirements pertaining to subsequent

development of the remaining portions of your lease area that must be included in your initial COP submittal are described in attachment G.
BOEM recommends discussing details of the survey work that will be conducted to support the submission of your initial COP at one or more pre-survey meetings; BOEM typically includes in its leases a stipulation requiring lessees to hold this type of pre-survey meeting.

If we determine that your initial COP submittal meets BOEM's data and information requirements, we will deem it complete and sufficient for review. Otherwise, BOEM will inform you that this information will need to be submitted prior to BOEM deeming the COP complete and sufficient for review. BOEM will then conduct our environmental and technical reviews of the COP and approve, disapprove, or approve with modifications the plan. In the event that the COP is approved or approved with modifications, you must submit an FDR and FIR pertaining to your Phase 1 project for BOEM's review, and proceed through the regulatory process outlined at 30 CFR 585.700-702 prior to fabricating and installing those proposed facilities.

COP Revisions to Support the Construction and Operation of Subsequent Phases

Each time that you are ready to proceed with development of an additional phase of your commercial lease area, in accordance with the schedule included in your approved COP, you must submit a revision to your COP for BOEM's review and approval. Each revision must include the information described in 30 CFR 585.626 and 627 for that phase of development, so that BOEM can proceed with the necessary environmental and technical reviews of your proposed COP revision.

Before you proceed with survey work necessary to support each COP revision, BOEM recommends, and may require through lease stipulations, the development of a survey plan and the scheduling of one or more pre-survey meetings to discuss the survey plan.

The process for submission and review of each COP revision, and each appropriately-scoped FDR and FIR, mirrors that described above for the initial COP submission.

(5) Required Survey Results and Supporting Data

30 CFR 585.626(a) As part of your COP, you must submit the results and supporting data from survey investigations (including previous surveys conducted to support the site assessment phase of your lease, if conducted) performed in support of the construction and operations activities you plan to conduct on your commercial lease. To ensure the accuracy and quality of the data, BOEM recommends that you submit information detailing the methodology, data processing, spatial information, and acquisition of your surveys. Your COP should describe resources, conditions, and activities that may be affected by your proposed activities; it must also include environmental conditions (e.g., sea floor structure, seismic activity) that could affect the activities proposed in your COP.

Every project has unique technical and site characteristics, and differs in the extent to which there are available data regarding the site's environmental setting. Therefore, it is important to discuss your specific projects' circumstances with BOEM at the pre-survey meeting(s) mentioned above. BOEM has prepared recommendations for providing baseline collection studies to support the acquisition of site characterization data in separate guidelines. These regional and national guidelines can be found at http://www.boem.gov/National-and-Regional-Guidelines-for-Renewable-Energy-Activities/. These guidelines may be updated periodically, and all new versions will supersede previous versions.

Note: Your shallow hazard (a) (1), geological (a) (2), and geotechnical (a) (4) survey results should be combined into one integrated Site Investigation Report (30 CFR 585.626(a) (6)) that may include any information gathered under the site assessment phase of your lease or from other sources. Your geological and biological surveys will determine whether (1) there is live bottom in the area of your project, and (2) whether the live bottom contains viable biological communities. See the requirements of 30 CFR 585.626(a) (2-3), the guidance contained herein and Attachment F for more information.

(a)(1) Shallow hazards survey.
Your shallow hazards survey results and supporting data should provide information sufficient to determine the presence of surface and shallow subsurface geological features and conditions and their likely effects on your proposed construction, operations, and facilities including, but not limited to:

(i) Shallow faults;
(ii) Gas seeps or shallow gas;
(iii) Mobile sediments, slumps or slides, potentially unstable slopes, creep, karst topography;
(iv) Gas hydrates;
(v) Surface live bottoms (in particular, rock exposed at the surface and not overlain with sediment veneer), buried channels, and scour features;
(vi) Ice scour of seabed sediments; and
(vii) Cables, artificial reefs, buoys, debris, and other man-made objects.

Your shallow hazards survey results, supporting data, and report should be submitted with the COP, and information acquired from them should be integrated with the information needs of 30 CFR 585.626. It should also include any information gathered under the site assessment phase of your lease. See Section (a) (5) of this guidance for further information on how to submit archaeological information.

(a)(2) Geophysical survey data relevant to the design and siting of your facility.
Your geophysical survey data should include an integrated interpretation of shallow subsurface conditions based on a shallow hazards survey; it should also include any information collected from other sources. Discuss how identified features may impact proposed construction, facilities, or operations. Report assessments of the following:

(i) Seismic activity at your proposed site;
(ii) Fault zones;
(iii) The possibility and effects of liquefaction and seabed subsidence;
(iv) The extent and geometry of faulting attenuation effects of geologic conditions near your site;
(v) Scour and sand waves; and
(vi) Slope stability.

(a)(3) Biological survey.
The biological survey results should report the presence/absence and distribution of biologically sensitive resources in the vicinity of your proposed activities and structures, including live bottoms, fish populations (including migratory populations), marine mammals, sea turtles, and birds. Include information on temporal and spatial abundance and seasonality of use for each species. See Attachment F and BOEM's survey guidelines for more detailed information.

(a)(4) Geotechnical Investigation.
Your geotechnical investigation results, supporting data, and sediment testing program should investigate the stratigraphic and geoengineering properties of the bottom sediment that may affect the foundations or anchoring systems of any structure permanently or temporarily attached to the seabed. Report the field and laboratory test methods employed, along with the applicability of these methods as they pertain to the quality of the samples, the type of sediment, the anticipated design application, and results of your program. Explain how the engineering properties of each sedimentary layer affect the design of your project, and how any variations in the sediment layers throughout the project site are addressed. Describe the uncertainties inherent in your testing program and the reliability and applicability of the chosen methods. Describe the following:

(i) The results of your testing program to investigate the stratigraphic and geoengineering properties of the sediment that may affect the foundations or anchoring systems for your project;

(ii) The results of adequate in-situ testing, boring, and/or sampling (for example, Cone Penetration Tests (CPTs), drilled borings, vibracores, etc.) at each foundation location, to examine all important sediment and rock strata to determine its strength classification, deformation properties, and dynamic characteristics; and

(iii) The results of a sufficient number of deep soil borings (with soil sampling and testing) within the project area to determine the vertical and lateral variation in seabed conditions and to provide the relevant geotechnical data required for design. To be considered a "deep" boring, the soil boring depth should be at least 10 meters deeper than the design penetration of the foundation piles. This recommended boring depth may be modified based on the consistency and strength of the sediments. For areas with highly variable subsea soil conditions, it may be appropriate to obtain a greater number of deep borings. Depending on the sediment and geologic conditions, it may be appropriate to utilize CPT probes instead of deep borings at selected locations.

Justification should be provided for any variations from the basic guidelines.

(a)(5) Archaeological resources survey.
Your historic property identification results, supporting data, and report should identify and describe any historic properties that may be potentially affected by your proposed activities, as defined by the NHPA (16 U.S.C 470 et. Seq). This includes, but is not limited to, historic properties that are (1) located onshore with a view of the proposed project; (2) in onshore/terrestrial areas where cables may come ashore; (3) in onshore staging areas; (4) in nearshore environments in state waters; and (5) in offshore areas. This information will be used by BOEM to comply with NHPA, NEPA, and other applicable environmental and preservation laws.

The report should be a stand-alone document that is submitted in conjunction with the Site Characterization Survey Report. The report represents an evaluation and synthesis of the data (both geophysical and geotechnical) gathered during site characterization activities for the purpose of identifying potential archaeological resources. To facilitate consultations, BOEM must receive the report in complete form; therefore, any changes to a lessee's plan(s) that may occur after submittal of a report to BOEM, as a result of either changes in the design of the proposed project or a request for additional information made by BOEM, should be incorporated into a revised report. The proposed project details presented in this report must match that which is presented in other portions of the COP. Details on the required contents of the archaeological resources assessment report may be found in BOEM's Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585.

(a)(6) Overall site investigation report.
You must prepare an overall site investigation report for a project that integrates the findings of the shallow hazard, geological, and geotechnical surveys for a proposed project. The report must include the following:

(i) Documentation of all investigations, surveys, in-situ and laboratory testing;
(ii) An analysis of the potential for:
Scouring of the seabed;
Hydraulic instability;
The occurrence of sand waves;
Instability of slopes at the facility location;
Liquefaction or possible reduction of sediment strength due to increased pore pressures;
Degradation of subsea permafrost layers;
Cyclic loading;
Lateral loading;
Dynamic loading;
Settlements and displacements;
Plastic deformation and formation collapse mechanisms; and
Sediment reactions on the facility foundations or anchoring systems;

(iii) Descriptions of sediment layers with geotechnical design parameters;
(iv) Geotechnical recommendations and design criteria for facility foundations and anchoring systems;
(v) Recommendations for mitigating geologic hazards.

(6) Project-Specific Information Requirements

30 CFR 585.626(b) A COP may use section headings that correspond to 30 CFR 585.626(b) or use the topic headings indicated below.

A complete and detailed project description is the foundation for understanding the impacts your project will have and how it will interact with the environment. The information required by 30 CFR 585.626(b) may be organized and developed into a complete project description (see Attachment B). The project description should be written in such that it can be easily understood by people unfamiliar with specialist terminology. For all construction and operations activities you propose to conduct under your COP, you must provide the following project-specific information:

Project Information		Guideline
(b)(1)	Contact Information	Identify an authorized representative's name, address, e-mail address, and phone number. This representative will be the main contact for the project.
(b)(2)	Designation of operator, if applicable	Designate an operator, if applicable, as required by 30 CFR 585.405.
(b)(3)	The construction and operation concept	Include a discussion of the following, using tables as appropriate: (i) A description of the objectives for the project; (ii) A description of the proposed activities, which should include: a. A description of the construction procedure for installing equipment; b. A description of how the project will be configured and how it will operate, including a description of the turbine array, any electrical service platforms (ESPs), the subsea power transmission cables, and any shore-side support infrastructure; c. Any other relevant information; (iii) A tentative schedule from start to completion, including the tentative schedule for all construction activities and for inspection and maintenance activities throughout the operational life of the project; and

		(iv) Any plans for phased development, pursuant to 30 CFR 585.629, or as directed in section (A) (2) of this guidance.
(b)(4)	Commercial lease stipulations and compliance	Include a description of the measures you took or will take to satisfy the conditions of any lease stipulations (if applicable) related to your proposed construction and/or operations activities. A table is a suitable format for presenting this information.
(b)(5)	Location plat (map drawn to scale)	The location plat should be a 1-page map showing the general location of the offshore project in relation to the coastline, with an overlay showing the OCS lease blocks. It should include the proposed route of the subsea cable back to shore (if applicable), the proposed location where the cable will cross land (if applicable), and the location where the cable will tie into the shore-side power grid (if known). In accordance with 30 CFR 585.626(b)(5), the location plat must include the surface location and water depth for all proposed and existing structures, facilities, and appurtenances located both offshore and onshore, including all anchoring/mooring data. To meet this requirement, more detailed, larger-scale maps of the offshore project site may be necessary to depict the proposed configuration of the turbines and any other offshore structures. Ideally, these detailed maps should also show the location of any subsea interconnecting power cables, relevant subsea features (e.g., rock formations, potential archaeological sites, magnetic anomalies, etc.) identified during the site surveys required by 30 CFR 585.626(a), as well as the proximity of these features to the proposed structures and subsea cables.
(b)(6)	General structural and project design, fabrication, and installation	Describe each type of structure or facility proposed for installation with your project, using tables, if appropriate. (i) Provide diagrams/drawings and fabrication information for all structures to be installed or attached to the seabed. (ii) List the design standards that you intend to use and a description of the environmental/met-ocean (meteorological and oceanographic) data you intend to use to establish the operational and extreme loading conditions for your structures (see Attachment C). (iii) Describe the water depth for surface structure and installation locations with X, Y coordinates

		and latitude/longitude. (iv) Indicate the general anchor radii for any facilities, vessels, or derrick barges to be used during installation. If the exact position of the anchors is not known, indicate maximum radius of anchors on the location plat.
(b)(7)	All cables and power lines, including those on project easements	Describe the location, design, and installation methods. Provide information on depths, testing, maintenance, repair, safety devices, exterior corrosion protection, inspection schedules, and decommissioning of all cables and transmission power lines, including those of project easements. Indicate the general anchor radii for any facilities, vessels, or derrick barges to be used during cable and/or power line installation. If the exact position of the anchors is not known, indicate maximum radius of anchors on the location plat.
(b)(8)	Description of the deployment activities	By 'deployment,' BOEM means how you propose to bring your equipment and materials to the construction site/project location from shore. Describe the safety and environmental protection features or measures that will be used. For your installation activities, describe the safety, prevention, and pollution control features or practices that will be used, and how you will use, if applicable, a certified verification agent (CVA) to review and verify each stage of the project. Describe your normal operating procedures or system and operating procedures and systems in the case of accidents or emergencies, whether natural or manmade.
(b)(9)	List of solid and liquid wastes generated	Report any National Pollutant Discharge Elimination System (NPDES) permit you expect to receive for your activities. Provide information on the projected nature and volume of liquid and solid wastes to be generated by all vessels and structures involved in your activities. Include both permitted operational wastes and any other identified wastes. Describe disposal methods and locations, if applicable. A table—similar to that presented in Attachment D—is a suitable format.
(b)(10)	List of all chemical products used	Provide a list of chemical products used (if stored volume exceeds United States Environmental Protection Agency

		(EPA) Reportable Quantities); the volume stored on location; their treatment, discharge, or disposal method and location; and any other necessary permit(s) pertaining to these chemical products. Describe how these products will be brought onsite, the number of transfers that may take place, and the quantity that may be transferred on each occasion.
(b)(11)	Description of any vessels, vehicles, and aircraft used to support your activities	Provide an estimate of the frequency and duration of any vessels/vehicles/aircraft traffic you anticipate for your construction and operation of your project. If not already provided in (4)(b)(3), provide the name, class specifications, and description of type of vessel(s) to be deployed for facility installations or surveys, including construction ships or barges, cable laying barges, refueling vessels, tug boats, seismic survey vessels, supply vessels, or crew vessels. For each vessel or vessel type, include length, displacement, crew size, type of marine sanitation device, type of propeller system(s), number of fuel tanks, and maximum fuel storage capacity for each tank (many operators have specification sheets for their vessels that report this information). Vessel availability may make it difficult to know all specific vessel information in advance, and if this is the case, provide as much detail as possible to inform the BOEM review. Indicate the following: (i) The average and maximum number of vessel/vehicle/aircraft anticipated to be in the construction area at any one time; (ii) The type of remotely operated vehicle(s) deployed, if applicable; (iii) The type of aircraft deployed, if applicable; (iv) Any recommendations or requirements for aircraft or vessel speed or operational restrictions, made by NOAA, the U.S. Coast Guard, or any other agency having jurisdiction.
(b)(12)	General description of operating procedures	Describe the operating procedures or systems you intend to use for your project under normal operating conditions. Describe the procedures and systems that will be used at your facilities in the case of emergencies, accidents, or non-routine conditions, regardless of whether they are man-made or natural. Include, as a part of non-routine conditions, descriptions of high-consequence and low-probability events.

(b)(13)	Decommissioning and site clearance procedures	Describe and explain the general concept and procedures proposed for the decommissioning of all installed components and facilities. Refer to 30 CFR 585.906-910 for additional information on decommissioning and site clearance procedures.
(b)(14)	List of all federal, state, and local authorizations, approvals or permits that will be required to conduct the proposed activities	Identify all federal, state, and local application approvals or permits you will have to obtain to conduct your proposed construction and operation activities. (For example, U.S. Army Corps of Engineers permits; any required USCG or Federal Aviation Administration (FAA) permits or approvals relating to warning lights; authorizations under the Marine Mammal Protection Act, etc.). Identify the originating statute and/or regulation that requires the permit, and then provide a statement indicating whether you have applied for or obtained such authorization, approval, or permit. If applied for, indicate the approval status for these authorizations. A table is a suitable format for presenting this information.
(b)(15)	Measures for avoiding, minimizing, reducing, eliminating, and monitoring environmental impacts	Describe the measures you will take (and that will be carried out pursuant to your COP) to avoid, minimize, reduce, eliminate, and/or mitigate environmental impacts. Describe any existing or planned environmental monitoring and mitigation systems you will implement before, during, and after construction, along with the effectiveness of these systems (see 30 CFR 585.633 (b) (2)). State whether your activities are likely to result in harassment, injury, or death of endangered or other protected species, and describe the measures you will take to avoid adverse interactions with these species. Based on your proposed activities, authorizations or permits may be required by the United States Fish and Wildlife Service (FWS) or the National Oceanic and Atmospheric Administration's National Marine Fisheries Service (NMFS) before you begin work.
(b)(16)	Information incorporated by reference	Reference information and data discussed in other plans that you previously submitted, that are referenced in BOEM documentation. If your COP relies on reference information and data from other sources, you should fully discuss such information and data in your COP and explain how this information and data was used to inform your conclusions.
(b)(17)	List of agencies and persons with whom you	The BOEM encourages early and frequent consultations with appropriate federal and state agencies, tribal

	have consulted or will consult about potential impacts of your proposed activities	governments, and the public regarding the potential impacts associated with your proposed activities. Indicate the names of people, their affiliation, and the dates on which you had contact, along with a short summary of issues discussed. A table is a suitable format in which to convey this information. It is important that you contact the USCG to discuss and clarify its expectation for the Navigational Safety Risk Assessment (NSRA) which you should prepare to satisfy the information requirements of 30 CFR 585.627(a)(8). The BOEM will rely on the USCG to review the NSRA and advise BOEM on its adequacy and the adequacy of any proposed navigational safety mitigation measures. Additional information on preparing a NSRA can be found in the USCG Navigation and Inspection Circular (NVIC) 02-07, "Guidance on the Coast Guard's Roles and Responsibilities for Offshore Renewable Energy Installations (OREI)." You should include information about any consultations you have had with the USCG in this section of the COP. It is suggested that you contact the FAA to discuss any issues arising from your project that relate to airspace restrictions, lighting requirements, use patterns, and/or potential radar interference (see FAA Advisory Circular 70: Obstruction Marking and Lighting (FAA AC 70/7460-1K); FAA Procedures for Handling Airspace Matters (FAA Order JO 7400.2G); and FAA Form 7460-1 for additional information). The FAA will review relevant portions of your proposed project and advise BOEM on its adequacy and the adequacy of any proposed mitigation measures. You should include information about any consultations you have had with the FAA in this section of the COP. The National Marine Fisheries Service Office of Protected Species should be contacted regarding any authorizations for the taking of marine mammals from proposed activities. An incidental harassment authorization may be required.
(b)(18)	Reference	Provide a list of all documents and published sources referenced as part of this plan or cross-reference to citations in any previously submitted plans or published material that is readily available to BOEM. You may include any sources incorporated by reference into a single "References Cited" section (listed above in (b) (16)).

(b)(19)	Financial assurance	Provide statements attesting to the fact that the activities and facilities as proposed in the COP are or will be covered by an appropriate bond or other approved security, as required by 30 CFR 585.515 and 30 CFR 585.516.
(b)(20)	CVA nominations for reports required in 30 CFR Part 585 (Subpart G)	Provide nominations for a CVA, as outlined in 30 CFR 585.706, or a request to waive the CVA requirement, as specified in 30 CFR 585.705(c).
(b)(21)	Construction schedule	Report a reasonable schedule for all construction phases of your project that considers all relevant project factors such as vessel availability and delivery dates of equipment. Show significant milestones of construction activity leading to the commencement of commercial operations. Submit a project work breakdown structure and provide periodic updates to BOEM, as needed.
(b)(22)	Air quality information	The requirements for submission of air emissions information for a renewable energy COP are provided in 30 CFR 585.659 and clarified in Attachment E of this guidance.
(b)(23)	Other information	Additional information requests by BOEM will be based on project-specific and site-specific needs that may not be possible to predict in advance. If the nature of your project presents circumstances and/or technology that warrant additional attention, BOEM may request additional data or information in order to assist BOEM in evaluating your COP.

B. Required Information to Accompany a COP

(1) Information for Compliance with NEPA and Other Relevant Laws

30 CFR 585.627(a) For construction and operations activities on a commercial lease, you must submit with your COP detailed information that describes resources, conditions, and activities that could be affected by your proposed project. You should describe the environment that may be affected by your proposed activities and include a description of specific impact producing factors and activities related to your activities (refer to Attachment F of this guidance for more

information). It is strongly recommended that you contact BOEM if you have questions about information needs prior to the submission of a COP.

The tables provided in Attachment F describe the information requirements for 30 CFR 585.627(a). This information will be used by BOEM to comply with NEPA and, as appropriate, other environmental laws such as the Endangered Species Act (ESA), the Marine Mammals Protection Act (MMPA), the Migratory Bird Treaty Act (MBTA), the Coastal Zone Management Act (CZMA), the National Historic Preservation Act (NHPA), the Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), and the American Indian Religious Freedom Act (AIRFA). The mitigation measures that may eventually apply to your project will be determined as a result of the analysis of this information, and may be influenced by the input of agencies with appropriate subject matter jurisdiction or expertise.

(2) Oil Spill Response Plan (OSRP)

Pursuant to 30 CFR 585.627(c), you are required to submit an OSRP to Bureau of Safety and Environmental Enforcement (BSEE), in accordance with 30 CFR Part 254.

(3) Safety Management System (SMS)

Pursuant to 30 CFR 585.627(d), you must submit your SMS to Bureau of Safety and Environmental Enforcement (BSEE), in accordance with section 585.810. The SMS must describe the following for all aspects of the project:

(i) How you will ensure the safety of personnel or anyone on or near your facilities;
(ii) Remote monitoring, control, and shutdown capabilities;
(iii) Emergency response procedures;
(iv) Fire suppression equipment, if needed;
(v) How and when you will test your Safety Management System; and
(vi) How you will ensure that personnel who operate your facility are properly trained.

Your SMS must be fully functional when you begin activities described in your approved COP. The BOEM strongly encourages you to ensure that your offshore renewable energy facilities meet the equivalent safety standards of those of unmanned offshore oil and gas facilities, pursuant to the U.S. Coast Guard's regulations in 33 CFR Subchapter N. You may reference the relevant sections of the following regulations to develop your SMS for unmanned facilities:

(i) Workplace Safety and Health – 33 CFR Part 142;
(ii) Design and Equipment – 33 CFR Part 143;
(iii) Lifesaving Appliances – 33 CFR 144.10;
(iv) Firefighting Equipment – 33 CFR Part 145; and
(v) Operations – 33 CFR Part 146.

The BOEM and BSEE commissioned a research study through the Technology Assessment Program (TAP) —Project #633, "Wind Farm/Turbine Accidents and the Applicability to Risks

to Personnel and Property on the OCS, and Design Standards to Ensure Structural Safety/Reliability/Survivability of Offshore Wind Farms on the OCS"—and the final report for this TAP study includes a proposed SMS template. Also, TAP Project #709 includes a SMS template as well as a SMS audit checklist. While these templates and the checklist were not generated by BOEM or BSEE and their use is not required, they can be useful reference documents or templates for the development and presentation of a SMS. The SMS should also include a communication plan that will adequately inform not only federal authorities, but other at-risk ocean users as well.

C. Revisions to an Approved COP

30 CFR 585.634 In cases where BOEM has already approved your COP, it is still possible that a COP revision may become necessary. You must notify BOEM in writing before conducting any activities not described in your approved COP, describing in detail the activities you propose to conduct. The BOEM will also periodically review the activities conducted under an approved COP. If the review indicates that the COP should be revised because of any of the following modifications, we may require you to submit revisions to the COP. Activities for which a proposed revision to your COP may be necessary include:

(i) Activities not described in an approved COP;
(ii) Modifications to the size or type of facility or equipment you will use;
(iii) Change in the surface location of a facility or structure;
(iv) Addition of a facility or structure;
(v) Change in the location of an onshore support base from one state to another or to a new base requiring expansion;
(vi) Changes in the location of bottom disturbances (anchors, chains, cables, etc.) by 500 feet or greater from the approved locations;
(vii) Structural failure of one or more facilities; and
(viii) Change in any other activity specified by BOEM.

D. Departures

30 CFR 585.103: The BOEM recognizes that new and emerging technology may advance quickly and that current regulations may not always be entirely applicable to the reality presented by any particular project. Therefore, BOEM retains the authority to issue departures from the regulations under certain circumstances. The BOEM will only consider requests for departures made in writing. The request must identify the section of the regulations from which you are asking relief, it must be consistent with subsection 8(p) of the OCS Lands Act, it must protect the environment and the public health to the same degree as if there were no approved departure from the regulations, and it must not impair the rights of third parties. Departures will be granted on a case-by-case basis and at the sole discretion of BOEM.

E. Contacts and Submittal Addresses

For further information or inquiries regarding these guidelines, please contact the Office of

Renewable Energy Programs at (703) 787-1340 or renewable_reporting@boem.gov. Submit one paper copy and one electronic version of the COP to the addressees indicated below.

Project Location by State (Offshore)	Filing Address
• Maine • New Hampshire • Massachusetts • Rhode Island • New York • New Jersey • Delaware • Maryland • Virginia • North Carolina • South Carolina • Georgia • Florida (South Atlantic and Straits of Florida Planning Areas)	Bureau of Ocean Energy Management Office of Renewable Energy Programs Mail Stop HM 1328 381 Elden Street Herndon, Virginia 20170-4817 Phone: (703) 787-1320
• Florida (Eastern Gulf of Mexico Planning Area) • Alabama • Mississippi • Louisiana • Texas	Bureau of Ocean Energy Management Gulf of Mexico OCS Regional Office Attn: Renewable Energy Program Mail Stop 5400 1201 Elmwood Park Blvd. New Orleans, Louisiana 70123-2394 Phone: 800-200-GULF
• Alaska	Bureau of Ocean Energy Management Alaska OCS Regional Office Mail Stop 8200 Centerpoint Building 3801 Centerpoint Drive, Suite 500 Anchorage, Alaska 99503 Phone: (907) 334-5200
• Washington • Oregon • California • Hawaii	Bureau of Ocean Energy Management Pacific OCS Regional Office Mail Stop 7000 760 Paseo Camarillo, 2nd Floor Camarillo, California 93010 Phone: (855) 320-1484
Bureau of Safety and Environmental Enforcement Submittal Address	
• Oil Spill Response Plan (OSRP)	Bureau of Safety and Environmental Enforcement Oil Spill Response Division Gulf of Mexico Region Branch - GE 921C 1201 Elmwood Park Boulevard New Orleans, Louisiana 70123-2394
• Safety Management System (SMS)	Bureau of Safety and Environmental Enforcement Office of Offshore Regulatory Programs

	Mail Stop HE 3314 381 Elden Street Herndon, Virginia 20170

F. Paperwork Reduction Act (PRA) Statement

The information collection provisions of this document are intended to provide clarification, description, or interpretation of requirements contained in 30 CFR 585 Subpart F. The Office of Management and Budget (OMB) has approved the information collection requirements for these regulations and assigned them OMB Control Number 1010-0176.

Attachment A:
Best Management Practices

Source: Establishment of an OCS Alternative Energy and Alternate Use Program, Record of Decision, Dec. 2007. U.S. Department of the Interior, Bureau of Ocean Energy Management, Regulation and Enforcement, Washington, D.C.

The BOEM prepared a Programmatic Environmental Impact Statement (PEIS) in 2007 to support the establishment of the Alternative Energy and Alternate Use Program. The Record of Decision for that PEIS adopted Best Management Policies and Practices (BMPs) that may be applicable to a range of renewable energy projects. These BMPs are included for your reference to assist you in preparing your COP for submission. The BOEM is currently clarifying these BMPs through guidance documents (available at http://www.boem.gov/Regulatory-Framework-Guidelines/). Check this website prior to developing a COP. Upon request, BOEM will assist you in determining which of these policies and BMPs are appropriate for a specific lease, easement, or right-of-way.

Phase/Resource	Best Management Practice
Preconstruction Planning	
	Lessees and grantees shall minimize the area disturbed by preconstruction site monitoring and testing activities and installations.
	Lessees and grantees shall contact and consult with the appropriate affected federal, state, and local agencies early in the planning process.
	Lessees and grantees shall consolidate necessary infrastructure requirements whenever practicable.
	Lessees and grantees shall develop a monitoring program to ensure that environmental conditions are monitored during construction, operation, and decommissioning phases. The monitoring program requirements, including adaptive management strategies, shall be established at the project level to ensure that potential adverse impacts are mitigated.
Seafloor Habitats	
	Lessees and grantees shall conduct seafloor surveys in the early phases of a project to ensure that the alternative energy project is sited appropriately to avoid or minimize potential impacts associated with seafloor instability or other hazards.
	Lessees and grantees shall conduct appropriate pre-siting surveys to identify and characterize potentially sensitive seafloor habitats and topographic features.
	Lessees and grantees shall avoid locating facilities near known sensitive seafloor habitats, such as coral reefs, hard-bottom areas, and chemosynthetic communities.

	Lessees and grantees shall avoid anchoring on sensitive seafloor habitats.
	Lessees and grantees shall employ appropriate shielding for underwater cables to control the intensity of electromagnetic fields.
	Lessees and grantees shall reduce scouring action by ocean currents around foundations and to seafloor topography by taking all reasonable measures and employing periodic routine inspections to ensure structural integrity.
	Lessees and grantees shall avoid the use of explosives when feasible to minimize impacts to fish and other benthic organisms.
	Lessees and grantees shall take all reasonable actions to minimize seabed disturbance and sediment dispersion during cable installation.
Marine Mammals	
	Lessees and grantees shall evaluate marine mammal use of the proposed project area and design the project to minimize and mitigate the potential for mortality or disturbance. The amount and extent of ecological baseline data required will be determined on a project basis.
	Vessels related to project planning, construction, and operation shall travel at reduced speeds when assemblages of cetaceans are observed. Vessels will also maintain a reasonable distance from whales, small cetaceans, and sea turtles, and these will be determined during site-specific consultations.
	Lessees and grantees shall minimize potential vessel impacts to marine mammals and turtles by requiring project-related vessels to follow the NMFS Regional Viewing Guidelines while in transit. Operators shall be required to undergo training on applicable vessel guidelines.
	Lessees and grantees shall take efforts to minimize disruption and disturbance to marine life from sound emissions, such as pile driving, during construction activities.
	Lessees and grantees shall avoid and minimize impacts to marine species and habitats in the project area by posting a qualified observer on site during construction activities. This observer will be approved by BOEM and NMFS.
Fish Resources and Essential Fish Habitats	
	Lessees and grantees shall conduct pre-siting surveys (may use existing data) to identify important, sensitive, and unique marine habitats in the vicinity of the projects; they will then design the project to avoid, minimize, or otherwise mitigate adverse impacts to these habitats.
	Lessees and grantees shall minimize construction activities in areas containing anadromous fish during migration periods.
	Lessees and grantees shall minimize seafloor disturbance during construction and installation of the facility and associated infrastructure.

Sea Turtles	
	Lessees and grantees shall minimize potential vessel impacts to marine mammals and sea turtles by requiring project-related vessels to follow the NMFS Regional Viewing Guidelines while in transit. Operators shall be required to undergo training on applicable vessel guidelines.
	Lessees and grantees shall take efforts to minimize disruption and disturbance to marine life from sound emissions, such as pile driving, during construction activities.
	Lessees and grantees shall locate cable landfalls and onshore facilities so as to avoid impacts to known nesting beaches.
Avian Resources	
	The lessee shall evaluate avian use in the project area and design the project to minimize or mitigate the potential for bird strikes and habitat loss. The amount and extent of ecological baseline data required will be determined on a project-to-project basis.
	Lessees and grantees shall take measures to reduce perching opportunities.
	Lessees and grantees shall locate cable landfalls and onshore facilities so as to avoid impacts to known nesting beaches of sensitive species during the breeding season.
	Lessees and grantees shall comply with Federal Aviation Administration (FAA) and USCG requirements for lighting while using lighting technology (e.g., low-intensity strobe lights) that minimize impacts on avian species.
Acoustic Environment	
	Lessees and grantees shall plan site characterization surveys by using the lowest sound levels necessary to obtain the information needed.
	Lessees and grantees shall take efforts to minimize disruption and disturbance to marine life from sound emissions, such as pile driving, during construction activities.
	Lessees and grantees shall employ, to the extent practicable, state-of-the-art, low-noise turbines or other technologies to minimize operational sound effects.
Fisheries	
	Lessees and grantees shall work cooperatively with commercial/recreational fishing entities and interests to ensure that the construction and operation of a project will minimize potential conflicts with commercial and recreational fishing interests.
	Lessees and grantees shall review planned activities with potentially affected fishing organizations and port authorities to prevent unreasonable fishing gear conflicts. Lessees and grantees shall minimize conflict with commercial fishing activity and gear by notifying registered fishermen of the location and time frame of the project construction activities well in advance of mobilization; they will

	also provide updates throughout the construction period.
	Lessees and grantees shall use practices and operating procedures that reduce the likelihood of vessel accidents and fuel spills.
	Lessees and grantees shall avoid or minimize impacts to the commercial fishing industry by marking applicable structures (e.g., wind turbines, wave generation structures) with USCG-approved measures (e.g., lighting) to ensure safe vessel operation.
	Lessees and grantees shall avoid or minimize impacts to the commercial fishing industry by burying cables, where practicable, to avoid conflict with fishing vessels and gear operation. If cables are buried, lessees and grantees shall inspect cable burial depth periodically during project operation to ensure that adequate coverage is maintained to avoid interference with fishing gear/activity.
Coastal Habitats	
	Lessees and grantees shall avoid hard-bottom habitats, including seagrass communities and kelp beds, where practicable, and restore any damage to these communities.
	Lessees and grantees shall implement turbidity reduction measures to minimize effects to hard-bottom habitats, including seagrass communities and kelp beds, from construction activities.
	Lessees and grantees shall minimize effects to seagrass and kelp beds by restricting vessel traffic to established traffic routes.
	Lessees and grantees shall minimize impacts to wetlands by maintaining buffers around wetlands, implementing BMPs from erosion and sediment control, and maintaining natural surface drainage patterns.
Electromagnetic Fields	
	Lessees and grantees shall use submarine cables that have proper electrical shielding and bury the cables in the seafloor, when practicable.
Transportation and Vessel Traffic	
	Lessees and grantees shall site alternative energy facilities to avoid unreasonable interference with major ports and USCG-designated Traffic Separation Schemes.
	Lessees and grantees shall meet FAA guidelines for sighting and lighting of facilities.
	Lessees and grantees shall place proper lighting and signage on applicable alternative energy structures to aid navigation per USCG circular NVIC 07-02 (USCG 2007) and comply with any other applicable USCG requirements.
	Lessees and grantees shall conduct all necessary studies of potential interference of proposed wind turbine generators with commercial air traffic control radar systems, national defense radar systems, and weather radar systems; they must also identify possible solutions.

Visual Resources	
	Lessees and grantees for wind projects shall address key design elements, including visual uniformity, use of tubular towers, and proportion and color of turbines.
	Lessees and grantees for wind projects shall use appropriate viewshed mapping, photographic and virtual simulations, computer simulation, and field inventory techniques to determine, with reasonable accuracy, the visibility of the proposed project. Simulations should illustrate sensitive and scenic viewpoints.
	Lessees and grantees shall comply with FAA and USCG requirements for lighting while minimizing the impacts through appropriate application.
	Lessees and grantees shall seek public input in evaluating the visual site design elements of proposed wind energy facilities.
	Within FAA guidelines, directional aviation lights that minimize visibility from shore should be used.
Operations	
	Lessees and grantees shall prepare waste management plans, hazardous material plans, and oil spill prevention plans, as appropriate, for the facility.

Attachment B:
Elements of the Project Description

30 CFR 585.626 The COP should provide a detailed description of the devices, systems, and each specific activity or class of activities that may experience environmental impacts from construction, operation, and decommissioning. The Project Description is an organizing theme that includes all or part of the requirements of sections 585.626(b)(3), (b)(6), (b)(7), (b)(8), (b)(b9), (b)(10), (b)(11), and (b)(12). A complete project description should include the following items:

Device Elements or System	Construction	Operation	Conceptual Decommissioning
Overall Project Description	●	●	●
Device configuration and how it operates		●	
Management system and structure	●	●	●
Remote monitoring system	●	●	
Transformer platform	●	●	●
Shore connections and sea-bottom appurtenances	●		●
Shore facilities	●	●	●
Markings, lighting, and proximity warnings	●	●	
Materials inventory by quantity and physical properties	●	●	
Description of Operational Concept	●	●	●
General concept for construction, operation, and decommissioning	●	●	●
Means of access to offshore structures	●	●	
Maintenance schedule and procedures	●	●	
Vessel and aircraft support needed for environmental monitoring and research activities, construction, operations, maintenance, and decommissioning	●	●	●
Noise and vibration levels	●	●	●
Chemical use and management	●	●	●
Potential discharges to the sea and air	●	●	●
Accidental events or scenarios, including non-routine conditions	●	●	●
Electrical Systems	●	●	●
Electrical systems (AC and DC)	●	●	●
Heating and cooling systems	●	●	
Power requirements	●	●	●
Grounding and Lightning Protection	●	●	

Power conversion system	●	●	
Device Elements or System	**Construction**	**Operation**	**Conceptual Decommissioning**
Energy storage and/or emergency power	●	●	●
Subsea cables	●		●
Mechanical Systems	●	●	●
Power conversion devices and gearboxes	●	●	
Hydraulic systems	●	●	●
Foundation and/or Mooring Systems	●	●	●
Installation and removal procedures for all bottom-founded and installed structures	●		●
Corrosion protection system	●	●	
Antifouling system	●	●	

Attachment C:
Design Standards & Environmental Loading for Offshore Wind Energy

I. Design Standards

30 CFR 585.626(b)(6) The BOEM's renewable energy regulations are not prescriptive regarding the design standards that must be used for an offshore wind energy installation. There are various United States, European, and international standards that could be applied to an offshore wind energy installation, but no single standard has yet been determined to be a comprehensive design standard for application in the offshore waters of the United States.

For offshore wind turbines, BOEM will accept a "design-basis" approach whereby the applicant proposes which criteria and standards to apply, and then justifies why each particular criterion and standard is appropriate. The International Electrotechnical Commission (IEC) standard 61400-3, "Wind turbines – Part 3: Design Requirements for Offshore Wind Turbines," is the recognized standard for development of the minimum design load cases. This should be examined for the design of offshore wind turbines and is therefore a good starting point for the design process.

Other offshore structural design standards, such as the American Petroleum Institute (API) Recommended Practice (RP) 2A, the Det Norske Veritas (DNV) Offshore Standard (OS) J101, and the American Bureau of Shipping (ABS) Guide for Designing Offshore Wind Turbines can be used in conjunction with IEC 614000-3 to perform detailed analyses for the design load cases described. The following guidelines and standards should also be considered for structural design of the facilities. These guidelines are constantly being updated, so the designer should make sure the latest versions are being used.

- International Organizations:
  - IEC 61400-1 – Wind Turbines Part 1: Design Requirements
  - IEC 61400-3– Wind Turbines Part 3: Design Requirements for Offshore Wind Farms
  - IEC 61400-22 – Wind Turbines Part 22: Conformity Testing and Certification of Wind Turbines
  - ISO 2394 - General Principles on Reliability of Offshore Structures
  - ISO 19900-1 General Requirements for offshore structures

- National Organizations:
  - AWEA – Recommended Practice for Design, Deployment and Operation of Offshore Wind Turbines in the United States (AWEA OCRP 2012)
  - API – Recommended Practice for Planning, Designing and Constructing Fixed Offshore Platforms – Working Stress Design (API-RP2A-WSD)

- Classification Societies:
  - ABS – Guide for Building and Classing Bottom-Founded Offshore Wind Turbine Installations
  - ABS – Guide for Building and Classing Floating Offshore Wind Turbine Installations

- DNV – Design of Offshore Wind Turbine Structure (DNV-OS-J101)
- DNV – Design of Floating Wind Turbine Structures (DNV-OS-J103)
- DNV – Offshore Substations for Wind Farms (DNV-OS-J201)
- Germanischer Lloyd (GL) Rules and Guidelines IV/2 – Guideline for the Certification of Offshore Wind Turbines

Specific guidance relating to the design of offshore wind energy installations is as follows:

(1) The Rotor-Nacelle Assembly (RNA) installed on the Offshore Wind Turbine (OWT) shall have a type certificate in accordance with IEC 61400-22 or other recognized standards.

(2) Commercial facilities should have a minimum design life equal to or greater than 20 years (plus allowance for construction, transportation and decommissioning), in accordance with IEC 61400-3, § 6.2.

(3) Safety Class for all fixed renewable energy facilities should be in accordance with AWEA OCRP 2012, §5.5 Exposure Categories. Nominal target reliability or safety class for all fixed and floating facilities shall be identified in the Project Plan required under CFR 585.600.

(4) Project design basis should include an accurate characterization of site-specific hazards such as hurricanes, ice loading, seismic activity, extreme met-ocean conditions, probability of impacts from floating vessels/objects, etc., as stipulated in IEC 61400-3, §5.2.

(5) Special attention should be given to the accurate characterization of the hazards of tropical and extra-tropical cyclone effects, including the combined effect of wind, waves, and ocean currents. Careful examination of the site-specific environmental hazard curve developed for each facility type should be performed to ensure that all safety factors/partial factors used in the design result in the expected nominal target reliability associated with the recognized design standards in use, as discussed in AWEA OCRP 2012, §5.9. A global robustness check, as stipulated by API-RP2A-WSD, shall be run to assess system survivability during an extreme environmental event.

(6) Each offshore wind turbine shall be designed for omnidirectional load conditions (with anticipated extreme yaw misalignment). Alternatively, each individual yaw control system shall have sufficient backup power to maintain yaw control for the expected duration of tropical cyclone conditions, with an allowance for return to primary power, as per GL-Technical Note, Certification of Wind Turbines for Tropical Cyclone Conditions, and §2.3.5.3 Electrical power network conditions.

(7) In addition to the Operational and Extreme environmental conditions, torque and fatigue life are particularly important design considerations for wind turbines, as the rotating blades can create significant dynamic effects. The unique loadings associated with the large, rotating blades and associated machinery should be carefully considered in the design, as stipulated in IEC 61400-1, §7.4 and IEC 61400-3 §7.4.

(8) Foundation design shall take into account long-term cyclic loading effects over the design life of the structure, including excessive rotation or deflection and degradation of soil stiffness.
(9) All structures shall have adequate protection against corrosion to ensure sufficient strength is maintained over the design life of the structure, as stipulated in IEC 61400-3, Annex H.
(10) All offshore structures above the water surface shall have lightning and fire protection, as stipulated in IEC 61400-24.

The BOEM and the Bureau of Safety and Environmental Enforcement (BSEE) have supported research into operational safety, efficiency, and pollution prevention related to offshore renewable energy development through the Technology Assessment Program (TAP), formerly known as the Technology Assessment and Research (TA&R) program. These studies are available to the general public and are posted on http://www.bsee.gov/Research-and-Training/Renewable-Energy-Research-(REnR)/

The projects can be grouped into six categories, as shown in the following table:

Renewable Energy Technology Research Studies		
Study No.	**Title**	**Category**
618	Comparative Study of Offshore Wind Turbine Generators (OWTG) Standards	Standards/Regulations
627	Assess/Develop Inspection Methodologies for Offshore Wind Turbine Facilities	Inspections/Safety
628	Assess the Design and Inspection Criteria and Standards for Wave and Current Energy Generating Devices	Marine/Hydrokinetic
629	Assess the Design and Inspection Criteria and Standards for Wave and Current Energy Generating Devices	Marine/Hydrokinetic
633	Wind Farm Turbine Accidents and the Applicability to Risks to Personnel and Property on the OCS; Design Standards to Ensure Structural Safety/Reliability/Survivability of Offshore Wind Farms on the OCS	Standards/Regulations
634	Mitigation of Underwater Pile-Driving Noise During Offshore Construction	Environmental
636	Characteristics, Behavior, and Response Effectiveness of Spilled Dielectric Insulating Oil in the Marine Environment	Environmental
648	Offshore Wind and Ocean Energy Installation Cost Estimate in the U.S. OCS	Design/Construction Fixed Bottom Turbines
650	Offshore Wind Turbine Inspection Refinements	Inspections/Safety
651	Evaluate the Effect of Turbine Vibration Requirements	Design/Construction

	on Structural Design Parameters	Fixed Bottom Turbines
656	Seabed Scour Considerations	Design/Construction Fixed Bottom Turbines
669	Floating Wind Turbines	Floating Offshore Wind Turbines
670	Design Standards for Offshore Wind Farms	Standards/Regulations
671	Offshore Electric Cable Burial for Wind Farms: State of the Art; Standards and Guidance: Acceptable Burial Depths and Separation Distances; and Sand Wave Effects	Design/Construction Fixed Bottom Turbines
672	Development of an Integrated Extreme Wind, Wave, Current, and Water Level Climatology to Support Standards-Based Design of Offshore Wind Projects	Design/Construction Fixed Bottom Turbines
686	Regulating Worker Safety in Renewable Energy Operations on the OCS	Inspections/Safety
701	Structural Integrity of OWT Oversight of Design, Fabrication, and Installation	Standards/Regulations
705	Design Guidelines for Station-Keeping Systems of Floating Wind Turbines	Floating Offshore Wind Turbines
706	Checklist of Items for the Design Basis Document for Offshore Wind Turbines (final checklist still pending)	Design/Construction Fixed Bottom Turbines
709	Example Safety Management System and Audit Criteria/Procedures Template and Checklist for Offshore Wind Projects	Inspections/Safety
710	Safety of Renewable Energy Operation in the U.S. Outer Continental Shelf	Design/Construction Fixed Bottom Turbines
720	Fatigue Design Methodologies Applicable to Complex Fixed and Floating Offshore Wind Turbines (recent award)	Floating Offshore Wind Turbines
721	Design of Offshore Wind Turbine Monopiles for Lateral Loads (recent award)	Design/Construction Fixed Bottom Turbines

II. Environmental Loading

A major design consideration for any offshore structure is the worst-case loading it may experience during its service life. To complicate matters, there are often many different types of loadings with different types of associated failure modes, and all must be considered in the design. For offshore structures, the marine environment makes the design process particularly challenging because, in addition to wind loading, there are waves and ocean currents to consider. During a severe storm, such as a hurricane, all three of these forces come into play and can produce a severe worst-case combined environmental loading that difficult to accurately predict. Therefore, an important aspect of the design process is to identify appropriate meteorological and oceanographic met-ocean data to be used to determine the extreme storm loading for the offshore installation.

National Oceanographic and Atmospheric Administration (NOAA) weather buoys are one source of data, although these are likely to under-predict the extreme wind speeds because of the boundary layer and shielding effects that large storm waves can have on surface winds during an extreme weather event. The API RP-2-MET standard provides met-ocean values for some regions of the OCS, particularly those regions of the Gulf of Mexico. The building codes for adjacent coastal communities can also provide valuable information for determining appropriate design wind speeds for a particular coastal region, and these should also be investigated. However, it is important to note that it is not just the wind loading but the worst-case combined effect of wind, waves, and ocean currents—both local, wind-driven currents as well as synoptic-scale ocean currents—that must be determined for your particular offshore site**.** You are strongly encouraged to meet with BOEM and discuss your approach for determining the appropriate worst-case met-ocean conditions prior to carrying out your site-specific met-ocean analysis.

Attachment D:
Waste and Discharge Information

585.626(b) (9) Provide information on the projected liquid and solid wastes to be generated by all vessels and facilities during all phases of the COP activities. Include both permitted operational wastes and any other identified wastes. A table similar to the one below may be used to show such information, which may include, but need not be limited to, the following elements:

Type of Waste or Composition	Approximate Total Amount Discharged	Maximum Discharge Rate	Means of Storage or Discharge Method
Sewerage from vessels	25 gal/person/day	NA	MSD Type III
Domestic water	35 gal/person/day	NA	Discharged overboard after treatment
Drilling cuttings, mud, or borehole treatment chemicals, if used	50 bbl	As generated	Water based; Discharged overboard
Uncontaminated bilge water[1]	5,000 gal/day	5,000 gal/day	Discharged overboard
Deck drainage and sumps[3]	200 gal/day	5,000 gal/day	Discharged overboard after treatment
Uncontaminated ballast water[1]	10,000 gal/day	5000 gal/day	Discharged overboard
Uncontaminated fresh or seawater[2]	NA	NA	Discharged overboard
Solid trash or debris	100 m^3/day	NA	Onshore landfill (identify location)
Chemicals, solvents, oils, greases	5 gal/day	NA	Incineration[4] (or other, (identify location)

bbl = 42 U.S. gallon barrel, 1 m^3 = 6.3 bbl.

[1] Refer also to U.S. Coast Guard regulations for bilge and ballast water treatment requirements for oil and grease as well as the EPA's vessel NPDES permits.

[2] Used for vessel air conditioning.

[3] Depending on weather.

[4] Incineration of these materials is not a likely option for the west coast of the U.S. You should plan on designating these as hazardous materials and disposing of them at onshore facilities.

Attachment E:
Air Emissions Screening

30 CFR 585.626(b) (22) You must comply with the Clean Air Act (42 U.S.C. § 7409 *et seq.*) and implement regulations according to the following table. You should provide a copy of the analysis that you prepare for the EPA, or other agency delegated by EPA for enforcement of the Clean Air Act, to BOEM subsequent to submittal to EPA (or other officially recognized designee). The digital files should contain the formatted meteorological files used in modeling runs, along with the emission estimates and control measures that apply.

If your project is located...	You must...
(1) In the Gulf of Mexico west of 87.5° west longitude (western Gulf of Mexico),	Include in your plan any information required for BOEM to make the appropriate air quality determinations for your project.
(2) Anywhere else on the OCS,	Follow the appropriate implementation regulations as promulgated by the USEPA under 40 CFR Part 55. Provide a copy of your analysis to BOEM.

For air quality modeling that you perform in support of the activities proposed in your plan, you must contact the appropriate regulatory agency to establish a modeling protocol. This ensures that the agency's needs are met and that the meteorological files used are acceptable before initiating the modeling work. In the western Gulf of Mexico (west of 87.5 ° west longitude), you must submit to BOEM three copies of the modeling report and three sets of digital files as supporting information. For analyses anywhere else on the OCS, you must provide a copy of the analysis that you prepare for the USEPA. The digital files must contain the formatted meteorological files used in the modeling runs, the model input file, and the model output file.

Attachment F:
Information Requirements for NEPA and Other Relevant Laws

Attachment F includes tables that specify the information requirements for each resource, condition, and/or activity identified in 30 CFR 585.627(a). Your COP should include the requested baseline information requirements and impact-producing factors. The discussion of environmental resources and impacting factors is informative rather than analytical; however, the level of detail will ultimately depend on the geographic extent of your activities, the duration or intensity of the impacting factors, and the sensitivity of resources in your project area. There should be enough detail to support the environmental analyses required by NEPA and other relevant environmental laws. Your COP should also include any environmental protection measures and monitoring activities you are proposing. Note that each table also identifies additional information and/or analyses that may be required prior to COP approval, but these do not necessarily have to be part of your submission with the COP. This additional information and/or analyses are integral to the environmental review process that will occur after COP submittal. Mandatory mitigation measures and monitoring requirements may be identified in the course of environmental review, and/or any environmental protection measures and monitoring identified in your proposal may need to be revised or modified to accommodate changes in the proposed activities and/or changes in the environment. It is strongly recommended that you contact BOEM about information needs described in this section prior to submitting your COP.

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(1) Hazards		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
Focus	• Describe the extent of meteorological and oceanographic forcing, geology and geomorphology, sediment conditions and sediment transport processes, and physiographic conditions within the area of your proposed project.		
Scope	• Describe a site-specific evaluation of meteorological and oceanographic conditions, geology and geomorphology, sediment conditions and sediment transport processes, and physiographic conditions having the potential to destabilize your planned activities or facilities. The area-wide evaluation should provide a description of the ecosystem context for the location you intend to place your project.		
Information Needs for COP Submittal	• Survey should be conducted in accordance with BOEM's Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR Part 585.		
Impacting Factors	• Activities that disturb the sea bottom—the nature, intensity, and duration of disturbances to the sea bottom, such as pile driving, cable laying and jetting, vessel anchoring, and other construction, operating, or decommissioning techniques. • Natural hazards—nature, intensity, and duration of local and global scour, wave strike and overtopping, and slope instability and seismic events • Accidental events—potential for and effects of collisions and structure failure.		
Other Potential Needs for COP Approval	• Additional information may be needed to support the evaluation of hazards and physical impacts, including but not limited to: o Stability analysis of seafloor morphology; o Modeling of wave and current interaction with proposed structures; o Modeling of proposed scour protection; and o Modeling of disturbances associated with foundation installation, cable jetting and burial, and cable landfall.		
Monitoring (That You Propose)	• Describe any monitoring activities you propose to undertake for construction and/or operations, as part of your COP proposal.		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(1) Hazards		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
Environmental Protection Measures (That You Propose)	• Describe any environmental protection measure of your project that is designed to minimize potential adverse effects on physical resources.		
Presentation of Results	• Provide reports and associated data in the format requested by BOEM and outlined in the Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR Part 585, the Guidelines for Submission of Spatial Data for Atlantic Offshore Renewable Energy Development Site Characterization Surveys, and/or other relevant guidance provided by BOEM. • Provide succinct narratives by topic at a level of detail appropriate to the scale of the impacts that each category of proposed activities may cause. • Provide report(s) that present the methods used, results of, and conclusions reached by any numerical modeling performed or interpretation. • Include data/information in tables where appropriate. • Include maps where appropriate (e.g., a bathymetric map, isopach, storm tracks, bottom type, and in sedimentary and/or geologic cross sections).		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(2) Water Quality		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
Focus	• Describe the existing water quality conditions and your project activities that could affect water quality.		
Scope	• Describe the water quality in the area proximal to your proposed activities and the incremental changes to the parameters that define water quality that may be caused by your proposed activities.		
Information Needs for COP Submittal	• Describe the general state of water quality in the area proposed for your project by reporting typical metrics for quality including the following: dissolved oxygen; chlorophyll; nutrient content; seasonal variations in algae or bacterial content; upwelling conditions; presence or absence of contaminants in water or sediment; turbidity or water visibility states and variation.		
Impacting Factors	• Activities that disturb the sea bottom—the nature, intensity, and duration of disturbances to the sea bottom that may increase turbidity or affect other water quality conditions. • Natural hazards—the environmental hazards and/or accidental events causing accidental releases of non-hazardous or hazardous materials and wastes. • Accidental events—routine and accident releases from construction equipment, vessels, and installed facilities.		
Other Potential Needs for COP Approval	• Additional information may be needed to support the evaluation of water quality impacts, including but not limited to: o Modeling of turbidity during foundation installation, cable jetting/burial, and cable landfall; o Oil or other fluid spill probability and spill trajectory modeling; and o Any Operation, Service and Maintenance Plan, Oil Spill Response Plan, Storm water Pollution Prevention Plan, and any other pollution control plan prepared to avoid and minimize impacts to water quality. • If additional information requirements apply to the proposed project, provide any draft plans or quantitative assessments undertaken and/or describe any that are planned.		
Monitoring (That You Propose)	• Describe any monitoring activities you propose to undertake for construction and/or operations, as part of your COP proposal.		
Environmental Protection Measures	• Describe any part of your project that is designed to minimize adverse effects on water quality. • If an NPDES permit is required by the EPA or if Water Quality Certification is required by the state(s) or ACOE, include a summary of the anticipated reporting and monitoring requirements.		

(That You Propose)	
Presentation of Results	• Provide succinct narratives by topic, at a level of detail appropriate to the scale of the impacts that each category of proposed activities may cause. Provide report(s) that present the methods used, results of, and conclusions reached by any numerical modeling performed. • Include data/information in tables where appropriate. • Include maps or tables where appropriate.

	CONSTRUCTION AND OPERATIONS PLAN (COP) § 585.627(a)(3) Biological Resources*		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
Focus	• Describe the nature and extent of biological resources that may be affected by activities proposed in your COP, along with the nature and extent to which your activities will affect such resources.		
Scope	• Include site-specific descriptions of species with potential impacting factors that may result from your proposed activities.		
Information Needs for COP Submittal	• Identify and describe coastal sandy and rocky intertidal, dune, wetland and marsh species and habitats that may be disturbed by proposed activities or reasonable extensions of your project—such as construction of transmission lines and facilities—that could be impacted by accidental spills, discharges or collisions. • Conduct a survey in accordance with BOEM's Guidelines for Providing Benthic Habitat Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585.		
Impacting Factors	• Activities that disturb the sea bottom—indicate maximum area of sea bottom disturbed as a result of your activities and a description of the duration and intensity of disturbance and how those disturbances are relevant to biological resources; • Activities that introduce sound into the environment—characterize the sound produced in both air and water. Include source level and frequency of each anthropogenic source and the expected sound attenuation path calculations for transmission loss, if applicable. • Activities that result in changes to ambient lighting—report the type, duration, and intensity of lighting at your facilities during construction, operations, and conceptual decommissioning activities. Annotate areas of both steady and/or flashing lighting if used. • Activities that result in changes to ambient electromagnetic fields (EMF) including testing, operations, and decommissioning—report the type, duration, and intensity of EMF-producing activities at your facilities. • Activities that may displace biological resources—describe vessel traffic patterns through all phases and locations of proposed structures, as well as any other proposed activities. • Activities that may result in direct injury or death of biological resources (e.g., turbine operations, support/construction vessel activities). • Accidental events—describe possible accidental events, such as materials or fuel spills and ship strikes.		

	CONSTRUCTION AND OPERATIONS PLAN (COP) § 585.627(a)(3) Biological Resources*		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
Other Potential Needs for COP Approval	• In lieu of direct observations, modeling of impact-producing factors on biological resources may be required. These may include, but are not limited to, the following: 1) Sound dispersion models; 2) EMF models; 3) Materials and fuel spill modeling; 4) Collision hazard and risk modeling; and 5) Species distribution modeling.		
Research and/or Monitoring (That You Propose)	• Describe any research and/or monitoring activities you propose to undertake for construction and/or operations, as part of your COP proposal. These activities may include plans to monitor and evaluate the results of mitigation over time to ensure that the intended outcomes are achieved.		
Environmental Protection Measures (That You Propose)	• Describe environmental protection measures that are proposed that are designed to minimize adverse effects on biological resources. ***Note that additional mitigation measures may be required for approval of your COP. These may be developed through scoping and consultations with other stakeholders and state and federal resource agencies.*		
Presentation of Results	• Provide a succinct narrative by topic with a level of detail that is proportionate to the scale of the activities you propose. • Include species and impact factor tables where appropriate. • Include maps where appropriate. ** You may combine the information provided for biological resources, threatened and endangered species, and sensitive biological resources and habitats into an integrated section, provided you clearly indicate protected species.*		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(b)(4) Threatened and Endangered Species*		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
Focus	• Describe the nature and extent of threatened, endangered, and candidate species for ESA listing that may be affected by activities proposed in your COP.		
Scope	• Include site-specific descriptions of species and potential impacting factors that may result from your proposed activities.		
Information Needs for COP Submittal	• A survey should be conducted in accordance with BOEM's Guidelines for Providing Information on Marine Mammals and Sea Turtles for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 Subpart F and the Guidelines for Providing Information on Fisheries Survey for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585.		
Impacting Factors	• Activities that disturb the sea bottom—indicate approximate area of sea bottom disturbed as a result of your activities and a description of the duration and intensity of disturbance and how those disturbances are relevant to threatened and endangered species; • Activities that introduce sound into the environment—characterize the sound produced in both air and water and its potential effect on threatened and endangered species. Include source level and frequency of each anthropogenic source and the expected sound attenuation path calculations for transmission loss. • Activities that result in changes to ambient lighting—report the type, duration, and intensity of lighting at your facilities; • Activities that result in changes to ambient electromagnetic fields (EMF) including testing, operations, and decommissioning. Report the type, duration, and intensity of EMF-producing activities at your project site. • Activities that may displace threatened and endangered species—describe vessel traffic patterns through all phases, locations of proposed structures. • Activities that may result in direct injury or death of threatened and endangered species (e.g., turbine operations, support/construction vessel activities). • Accidental events—describe possible accidental events, such as materials or fuel spills and ship strikes.		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(b)(4) Threatened and Endangered Species*		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
Other Potential Needs for COP Approval	• In lieu of direct observations, modeling of impact-producing factors and their potential effects on threatened and endangered species may include, but are not limited to, the following: 1) Sound dispersion models; 2) EMF models; 3) Materials and fuel spill modeling; 4) Collision hazard and risk modeling; and 5) Species distribution modeling		
Research and/or Monitoring (That You Propose)	• Describe any research and/or monitoring activities you propose to undertake for construction and/or operations, as part of your COP proposal. These activities may include plans to monitor and evaluate the results of mitigation over time to ensure that the intended outcomes are achieved.		
Environmental Protection Measures (That You Propose)	• Describe environmental protection measures that are proposed as part of your project that are designed to minimize adverse effects on threatened and endangered species.		
Presentation of Results	• Provide reports and associated data in the format requested by BOEM and outlined in the Guidelines for Providing Information on Marine Mammals and Sea Turtles for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 Subpart F, the Guidelines for Providing Information on Fisheries Survey for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585, and/or other relevant guidance provided by BOEM. • Provide a succinct narrative by topic, targeted to a level-of-detail proportionate to the scale of the activities you propose. • Include species and impact factor tables where appropriate. • Include maps where appropriate.		

** You may combine the information provided for Biological Resources, Threatened and Endangered Species, and Sensitive Biological Resources and Habitats into an integrated section, provided you clearly indicate protected species.*

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(5) Sensitive Biological Resources or Habitats*		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
Focus	• Describe the nature and extent of sensitive biological resources or habitats that may be affected by activities proposed in your COP. Include sensitive habitats that may be scarce on a regional scale and vulnerable to proposed activities or are designated as special areas (e.g., essential fish habitat, parks, sanctuaries, and marine protected areas).		
Scope	• Include area-wide and site-specific descriptions of species with potential impacting factors that may result from your proposed activities.		
Information Needs for COP Submittal	• Survey should be conducted in accordance with BOEM's Guidelines for Providing Information on Marine Mammals and Sea Turtles for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 Subpart F and Guidelines for Providing Information on Fisheries Survey for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585.		
Impacting Factors	• Activities that disturb the sea bottom—indicate approximate area of sea bottom disturbed as a result of your activities, as well as a description of the duration and intensity of disturbance and how those disturbances are relevant to sensitive biological resources or habitats. • Activities that introduce sound into the environment—characterize sound produced in both air and water by your activities and noise on sensitive biological resources or habitats. Include source level and frequency of each anthropogenic source and the expected sound attenuation path calculations for transmission loss. • Activities that result in changes to ambient lighting—report the type, duration, and intensity of lighting at your facilities. • Activities that result in changes to ambient electromagnetic fields (EMF) including testing, operations, and decommissioning—report the type, duration, and intensity of EMF-producing activities at your facilities. • Activities that may displace sensitive biological resources or alter habitats—describe vessel traffic patterns through all phases, locations of proposed structures, and locations of sensitive biological resources or habitats. • Activities that may result in direct injury or death of sensitive biological resources (e.g., turbine operations, support/construction vessel activities).		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(5) Sensitive Biological Resources or Habitats*		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
	• Activities that increase the turbidity of the water column and re-suspension of sediment—report the type and duration of activities creating turbidity and how turbidity is relevant to sensitive biological resources or potential sedimentation of benthic fauna and habitats. • Accidental Events—describe possible accidental events, such as materials or fuel spills and ship strikes, and how these may affect sensitive biological resources or habitats.		
Other Potential Needs for COP Approval	• You may be required to conduct a biological survey if survey information from any available source shows that possible sensitive biological resources could be negatively affected by your proposed activities. • In lieu of direct observations, modeling of impact producing factors on sensitive biological resources or habitats may be required. These may include, but are not limited to, the following: 1) Sound dispersion models; 2) EMF models; 3) Materials and fuel spill modeling; 4) Collision risk and hazard modeling; and 5) Species distribution modeling.		
Research and/or Monitoring (That You Propose)	• Describe any research and/or monitoring activities you propose to undertake for construction and/or operations as part of your COP proposal. These activities may include plans to monitor and evaluate the results of mitigation over time to ensure that the intended outcomes are achieved.		
Environmental Protection Measures (That You Propose)	• Describe environmental protection measures that are proposed that are designed to minimize adverse effects on sensitive biological resources or habitats.		
Presentation of Results	• Provide reports and associated data in the format requested by BOEM and outlined in the Guidelines for Providing Information on Marine Mammals and Sea Turtles for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585 Subpart F, Guidelines for Providing Information on Fisheries Survey for Renewable Energy Development on the Atlantic Outer Continental		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(5) Sensitive Biological Resources or Habitats*		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
	Shelf Pursuant to 30 CFR Part 585 and/or other relevant guidance provided by BOEM. • Provide a succinct narrative by topic, targeted to a level-of-detail proportionate to the scale of the activities you propose. • Include species and impact factor tables where appropriate. • Include maps where appropriate.		

* *You may combine the information provided for Biological Resources, Threatened and Endangered Species, and Sensitive Biological Resources and Habitats into an integrated section, provided you clearly indicate protected species.*

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(6) Archaeological Resources		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
Focus	• Provide detailed information regarding the nature and location of historic properties to assist BOEM in reviewing your COP under NEPA and Section 106 of the National Historic Preservation Act (36 CFR PART 800).		
Scope	• Describe the methods and results of surveys conducted to identify historic properties that may be affected by your proposed activities. As defined in the Section 106 regulations at 36 CFR 800.16(l)(1), historic property means any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places, which is maintained by the Secretary of the Interior. This term includes artifacts, records, and remains that are related to and located within such properties. This term also includes properties of traditional religious and cultural importance to an Indian tribe or Native Hawaiian organization and that meet the National Register criteria. The term Indian tribe is defined at 36 CFR 800.16(m), and the term Native Hawaiian organization is defined at 36 CFR 800.16(s) (1).		
Information Needs for COP Submittal	• Provide a detailed description of the methods and results of surveys conducted to identify historic properties that may be affected within the geographic area or areas of your activities. These geographic areas include, but may not be limited to: 1) The depth and breadth of the seabed potentially affected by bottom-disturbing activities; 2) The onshore viewshed from which renewable energy structures would be visible; 3) The depth and breadth of ground disturbing activities and the viewshed on onshore locations where transmission cables come ashore; and 4) Any temporary or permanent construction, staging, or anchoring locations. • For the identification of historic properties within the seabed portions of the OCS, a historic property identification survey should be conducted in accordance with BOEM's Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585. • For the identification of historic properties within state submerged lands, within the onshore viewshed, and within onshore terrestrial areas, a historic property identification survey(s) should be conducted in a		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(6) Archaeological Resources		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
	manner acceptable to the relevant State Historic Preservation Office(s) (SHPO). If located on tribal lands, the historic property identification survey(s) should be conducted in a manner acceptable to the affected tribe. The term tribal land is defined at 36 CFR 800.16(w) to mean all lands within the exterior boundaries of any Indian reservation and all dependent Indian communities.		
Impacting Factors	• Activities that disturb the sea bottom—indicate the nature, intensity, extent, and duration of disturbances to the sea bottom that may affect historic properties. • Activities that disturb the ground—indicate the nature, intensity, extent, and duration of disturbances to the ground that may affect historic properties. • Visual impacts.		
Other Potential Needs for COP Approval	• Additional site-specific information may be requested for compliance with NEPA or NHPA, depending on the nature of the survey results. This may include requests for additional information to verify the presence of historic properties, to evaluate National Register eligibility of identified properties, and/or to resolve adverse effects to historic properties.		
Monitoring (That You Propose)	• Describe any monitoring activities you propose to undertake for construction and/or operations, as part of your COP proposal.		
Environmental Protection Measures (That You Propose)	• Describe environmental protection measures that are proposed as part of your project that are designed to minimize potential effects to historic properties. • Report recommended avoidance measures and buffers from potential historic properties (including side scan sonar targets, magnetometer anomalies, sub-bottom reflectors, or other data that may indicate the presence of a potential historic property). • Report how construction and operation activities will be conducted to adequately protect known or potential historic properties.		
Presentation of Results	• Provide reports and associated data in the format requested by BOEM and outlined in the Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585, the Guidelines for Submission of Spatial Data for Atlantic Offshore Renewable Energy Development Site Characterization Surveys, and/or other relevant guidance provided by BOEM or SHPOs. • Provide pre-construction anchor maps showing the estimated locations, types, and sizes of anchors that will be used during construction activities. Include any areas identified for avoidance. Provide		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(6) Archaeological Resources		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
	information on proposed anchoring locations (or radius of potential anchoring locations) and a detailed description of all ground tackle and mooring methods for construction and operation. (*Note: Post-construction maps that show all areas of seafloor impacts with precise locations may be necessary after construction and should include any areas that were identified for avoidance.)*		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(7) Social and Economic Resources		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
Focus	• Describe the onshore economic baseline of the coastal areas that may be affected by your project. Describe the context of existing socioeconomic activities and resources and extant demographic and economic patterns for construction, operation, and your preferred option for decommissioning.		
Scope	• Describe what socioeconomic activity and resources in the onshore and coastal environment are affected by your project phases.		
Information Needs for COP Submittal	• Identify the major coastal industries (onshore and offshore) of the affected area • Describe any economic modeling (e.g., job creation) • Describe the commercial and recreational fisheries, recreational resource use patterns, employment and demographic patterns (particularly those related to environmental justice considerations), transportation use patterns, and visual expressions that would be affected by your construction and operations activities. • Refer to the Fisheries Best Management Practices in Attachment A.		• Describe the commercial and recreational fisheries, recreational resource use patterns, employment and demographic patterns, transportation use patterns, and visual expressions that would be affected by the removal of your facilities.
Impacting Factors	• Activities that may displace or impact fishing, recreational, and tourism activities. • Influx of non-local employees that may impact housing availability.		
Other Potential Needs for COP Approval	• If your operating facilities are visible from the shoreline, a Visual Impact Assessment (VIA) will likely be required as part of NEPA to evaluate vantages from: 1) Variable heights at and above the beach and shoreline; 2) Variable heights at and above known protected areas (see 30 CFR 585.627(a)(5) and (6)); 3) Variable heights at and above potential places or areas that are eligible for entry onto historic lists; 4) Land cover types or frequented locations along the coastal area that are not directly on the beach; 5) How seasonal sun angles, times of day, and meteorological conditions affect the above; and		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(7) Social and Economic Resources		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
	6) Describe the potential visual impacts to any coastal prehistoric or historic resources that are listed, eligible, or potentially eligible for listing on the National Register of Historic Places.		
Monitoring (That You Propose)	• Describe any monitoring activities you propose to undertake for construction and/or operations, as part of your COP proposal.		
Environmental Protection Measures (That You Propose)	• Describe environmental protection measures that are proposed as part of your project that are designed to minimize adverse effects on social and economic resources.		
Presentation of Results	• Narrative of each topic that includes data/information. • Summarize in tables and maps where appropriate.		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(8) Coastal and Marine Uses		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
Focus	• Describe all known current sea surface, subsurface, and sea bottom uses of state and OCS waters nearest to your proposed project.		
Scope	• Competing uses include points (for example, navigation buoys) and zones (for example, dredge material disposal sites). Describe the point and zoned uses or authorizations of state or OCS air mass and sea surface, subsurface, or sea bottom in the area planned for your project.		
Information Needs for COP Submittal	• Describe how the construction and operation of your facilities take account of, are able to co-occur with, or do not interfere with any other authorized use of the OCS (short of the other potential needs for COP approval (below). • Map the coastal and marine uses and include commercial or military air ascent or descent corridors. Describe the intensity or seasonality of use.		
Impacting Factors	• Activities that may cause conflict with temporal and seasonal space use by other authorized users of the coastal zone or OCS.		
Other Potential Needs for COP Approval	• A geo-referenced (GIS-type) 3-D analysis of your facilities together with all other authorized users of OCS air, or water surface, column, and bottom space in context of temporal or seasonal use pattern may be necessary to illustrate the diverse coastal and marine uses in the area affected by your proposed project. • A Navigational Safety Risk Assessment (NSRA) may be required pursuant to (regulation), and will be reviewed by the U.S. Coast Guard to evaluate the following: (1) the impact the offshore energy installation will have on other marine users; and (2) the potential for it to interfere with vessels, aircraft, or other authorized users of the air space and the sea surface, water column, or sea bottom (for example, fisheries). For more information, see (NVIC) 02-07, "Guidance on the Coast Guard's roles and responsibilities for Offshore Renewable Energy Installations (OREI)".		
Monitoring (That You Propose)	• Describe any monitoring activities you propose to undertake for construction and/or operations, as part of your COP proposal. • Refer to the Costal Habitants Best Management Practices in Attachment A.		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(8) Coastal and Marine Uses		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase***
Environmental Protection Measures (That You Propose)	• Describe environmental protection measures that are proposed that are designed to minimize adverse effects on other coastal and marine uses.		
Presentation of Results	• Provide an integrated map(s) and descriptions of extant coastal and marine use patterns defined by intensity and seasonality in your project area.		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(9) Consistency Certification		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
Focus	• Ensure that lessees and applicants are aware of CZMA requirements stated in the regulation and timing for submittals.		
Scope	• State(s) that are affected by your project may require that you receive coastal consistency certification of your project with their state CMP (15 CFR Part 930).		
Information Needs for COP Submittal	• The Consistency Certification needs to be completed before the COP may be approved.		• Conceptual decommissioning should be included in your consistency certification submittal. • Additional consistency certification will be required at the time of the actual decommissioning of a project.
Impacting Factors	• Listed activities should be conducted in a manner that is consistent with the enforceable policies of each applicable state's CMP.		
Other Potential Needs for COP Approval	• Construction and operation activities should be conducted in such a manner to comply with each applicable state's approved CMP. • Competitive commercial leases fall under 30 CFR 930, Subpart D, and non-competitive commercial leases fall under 30 CFR 930, Subpart E. • The applicant or lessee should ensure that the state(s) have a NOAA-approved CMP that includes the specific review of renewable energy activities on the OCS beyond their coastal zone in order to be applicable to a COP. • For leases under Subpart D, necessary data and information that the applicant shall furnish the state agency along with the consistency certification is listed in 30 CFR 930.58 (a)-(c). • For leases under Subpart E, necessary data and information that the		• Conceptual decommissioning should demonstrate how activities will be conducted in order to comply with each applicable state's CMP.

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(9) Consistency Certification		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
	lessee shall furnish BOEM is listed in 30 CFR 930.76 (a)-(c).		
Presentation of Results	• The lessee must include one paper copy and one electronic copy of the consistency certification for the project to verify compliance with each applicable state's approved CMP, including the required information and analysis, pursuant to section 585.627(a).		

	CONSTRUCTION AND OPERATIONS PLAN (COP) 30 CFR 585.627(a)(10) Other Resources, Conditions, and Activities		
	Construction Phase	**Operation Phase**	**Conceptual Decommissioning Phase**
Focus	• The BOEM strongly recommends that you consult with BOEM about the nature of your proposal before submitting a COP.		
Scope	• If the nature of your project presents new kinds of environmental impacts that are novel or imprecisely understood, BOEM may request the appropriate data or information in order to complete our environmental analysis and to support the necessary consultations with other state and federal agencies.		
Information Needs	• Contact the appropriate BOEM Regional Office for more information.		
Impacting Factors	• Contact the appropriate BOEM Regional Office for more information.		
Monitoring	• Contact the appropriate BOEM Regional Office for more information.		
Environmental Protection Measures	• Contact the appropriate BOEM Regional Office for more information.		
Presentation of Results	• Contact the appropriate BOEM Regional Office for more information.		

Attachment G:
Phased Development Data Requirements

This table describes the minimum site characterization data BOEM expects to be submitted with the lessee's initial COP when the lessee is proposing phased commercial development of the lease area, so that BOEM will be able to prepare our NEPA documentation, conduct consultations, and meet other regulatory requirements.

Site Characterization Data:

Resource	Information Required in the Initial COP Submittal for Proposed Phase 1 Activities	Information Required in the Initial COP Submittal for Proposed Subsequent Phases to be Developed
Avian	For Atlantic Region, follow *BOEM's Guidelines for Providing Avian Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585.* For other regions, the information required will be discussed during the pre-survey coordination with BOEM.	For Atlantic Region, follow *BOEM's Guidelines for Providing Avian Survey Information for Renewable Energy Development on the Atlantic Outer Continental Shelf Pursuant to 30 CFR Part 585*. For other regions, the information required will be discussed during the pre-survey coordination with BOEM.
Marine Mammals and Sea Turtles	For Atlantic Region, follow *BOEM's Guidelines for Providing Marine Mammal and Sea Turtle Survey Information for renewable energy activities on the OCS.* For other regions, the information required will be discussed during the pre-survey coordination with BOEM.	For Atlantic Region, follow *BOEM's Guidelines for Providing Marine Mammal and Sea Turtle Survey Information for renewable energy activities on the OCS.* For other regions, the information required will be discussed during the pre-survey coordination with BOEM.
Fisheries	For Atlantic Region, follow *BOEM's Guidelines for Providing Fisheries Survey Information.* For other regions, the information required will be discussed during the pre-survey coordination with BOEM.	Must include desktop analysis for the fisheries resources that occur in the subsequent area.

Benthic Habitats	For Atlantic Region, follow *BOEM's Guidelines for Providing Survey Information for Benthic Habitat*. For other regions, the information required will be discussed during the pre-survey coordination with BOEM.	Must include known sensitive benthic sites and essential fish habitat; provide information on known sites potentially sensitive to impacts from the proposed phase development and essential fish habitat for the subsequent area. These sites can be identified through such sources as: existing publicly available information, broad-scale high resolution geophysical surveys within the subsequent area, broad-scale grab samples and/or seafloor and sediment profile imagery.

Archaeological/ Cultural Resources	Follow BOEM's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part* 585 for all activities proposed under Phase 1. This must include, but is not limited to, the complete results of identification surveys within the Phase 1 development area, along the transmission corridor, and within any onshore areas potentially impacted by ground disturbing activities.	Follow BOEM's *Guidelines for Providing Archaeological and Historic Property Information Pursuant to 30 CFR Part 585* for all activities proposed under subsequent phases of development, or provide the following: (1) An archaeological sensitivity assessment. This must include, but is not limited to, a cultural and environmental context and an analysis of the potential for pre-contact and historic period sites to be located within the subsequent phases based on background research and the archaeological analysis of existing data. In some cases, reconnaissance level survey may be useful to inform future identification efforts and planning for subsequent phases of development. (2) Complete visual impact assessment. This must include assessment of all currently proposed and future phases of development. This must include accurate and realistic photo-simulations, in addition to delineation of the onshore viewshed from which renewable energy structures, whether located offshore or onshore, would be visible. (3) Historic property identification survey conducted within the onshore viewshed as defined by the currently proposed activities and all potential future phases of development. This survey must be conducted in a manner acceptable to the affected State Historic Preservation Office (SHPO).

Hazards	*Follow BOEM's Guidelines for Providing Geophysical, Geotechnical, and Geohazard Information Pursuant to 30 CFR Part 585*	For subsequent area, provide data from desktop studies on offshore activities and hazard identification. The desktop studies should include the following topics: <u>Anthropogenic Conditions and Hazards</u> Fisheries, marine sanctuaries, protected species, cables/pipelines, hydrocarbon exploration, restricted areas, hazards (shipwrecks, anchorage zones, rock outcrops, etc.), and territorial claims. <u>Environmental Conditions and Hazards</u> Oceanography, geology, bathymetry, geomorphology, seafloor conditions, seismic and volcanic activity, sediment transport, meteorology, navigational warnings, and restricted locations and/or time periods.

Note: BOEM's guidelines for renewable energy activities can be found at the following link http://www.boem.gov/National-and-Regional-Guidelines-for-Renewable-Energy-Activities/